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United States Department of Agriculture, FOREST SERVICE.

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SILVICAL LEAFLET 29.

BLUE SPRUCE.

Picea parryana (André) Parry.

Blue spruce is not so important commercially as Engelmann spruce. It is less widely distributed, is less abundant within its range, and the wood is coarser and has more of a tendency to warp. It is known chiefly on account of the color of the foliage, and is planted extensively as an ornamental tree, both in the United States and in Europe.

RANGE AND OCCURRENCE.

Blue spruce grows in the Uinta and Wasatch Mountains in Utah, and in the Rocky Mountains from the Medicine Bow Mountains in southern Wyoming, through Colorado, eastern Arizona, and New Mexico to the Mogollon Mountains in southern New Mexico. Though nowhere abundant, it is most common in Colorado and Utah. It is rare and local in Arizona and New Mexico.

It is found at altitudes of from 6,000 to 9,000 feet in the northern part of its range, and from 8,500 to 10,000 feet in the extreme southern extension of the species. It occupies the same altitudinal zone as yellow pine and Douglas fir, but unlike them it keeps to the banks of streams and the first benches above them, and seldom climbs more than from 200 to 300 feet above the stream bed. At its upper limit, in the subalpine forest of Engelmann spruce and alpine fir, blue spruce sometimes ascends the lower moist slopes at the heads of streams. Even in the best situations it is scattered singly or in small groups, either isolated or in stands of other species.

CLIMATE.

In the region where blue spruce is found the growing season is short, from 3 to 3½ months, and frost may be expected every month in the year. The temperature may range from -45° to 110° F., with a mean annual temperature of from 40° to 45° .

The amount of rainfall varies from 12 to 25 inches, and is fairly well distributed through the growing season.

ASSOCIATED SPECIES.

This tree seldom forms pure stands. It is usually found either in isolated groups along streams, or scattered through forests of other species. It is commonly associated with narrowleaf cottonwood, willow, and juniper at its lower limit, and with Engelmann spruce and alpine fir at its upper limit. In the Uinta Mountains it grows on slopes with Douglas fir, and at middle elevations it is frequently associated with yellow pine and Douglas fir near streams in mountain valleys.

HABIT.

Blue spruce ordinarily reaches a diameter of 30 inches and a height of 90 feet, but at its best development may attain a height of 120 feet and a diameter of 4 feet. It is a tall, symmetrical tree, with a tapering bole and a long, conical crown, which is broader and more spreading than that of Engelmann spruce. The tree is limby, and the crown usually extends to the ground.

The root system is flat and spreading, similar to that of Engelmann spruce, but deeper and stronger. The tree is very seldom uprooted.

SOIL AND MOISTURE.

Blue spruce is very exacting in its demands on soil moisture, but grows on a variety of soils, from moist, loose gravel or sand on the banks of streams, to the richer, dry sandy loams of adjacent benches, and the poor, gravelly, and stony soils of the lower slopes; but the soil, of whatever quality, must be permanently moist. It grows only on slopes where there is constant and abundant moisture.

TOLERANCE.

Blue spruce is a fairly tolerant tree, less tolerant than Engelmann spruce, but more so than yellow pine, Douglas fir, or aspen. In favorable situations the tree will grow under yellow pine and Douglas fir.

GROWTH AND LONGEVITY.

Blue spruce is a moderately rapid-growing tree, although of slower growth than Engelmann spruce or Douglas fir. Its period of most rapid growth is between 25 and 100 years of age.

REPRODUCTION.

The trees seed abundantly, with good seed crops every year, but the seeds are very apt to be infertile, and reproduction is usually poor.